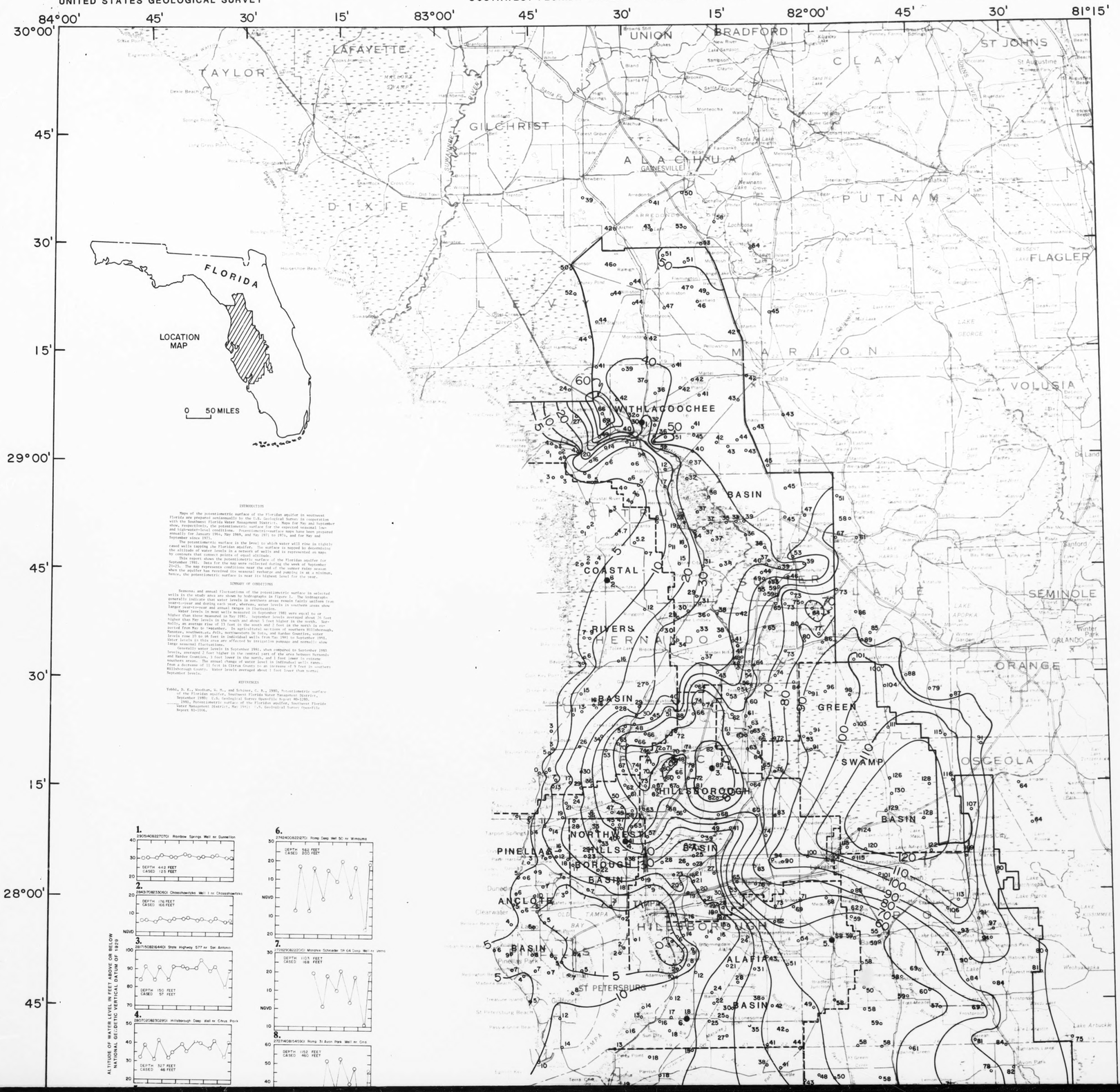
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH
SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT

OPEN-FILE REPORT 82-101

POTENTIOMETRIC SURFACE OF THE FLORIDAN AQUIFER, SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT, SEPTEMBER 1981



INTRODUCTION

Maps of the potentiometric surface of the Floridan aquifer in southwest Florida are prepared semiannually by the U.S. Geological Survey in cooperation with the Southwest Florida Water Management District. Maps for May and September represent, respectively, the potentiometric surface for the expected seasonal low- and high-water-level conditions. Potentiometric-surface maps have been prepared annually for January 1964, May 1965, May 1969, and May 1971 to 1975, and for May and September since 1977.

The potentiometric surface is the level to which water will rise in tightly cased wells tapping the Floridan aquifer. The surface is mapped by determining the altitude of water levels in a network of wells and is represented on maps by contouring lines connecting points of equal altitude.

This report shows the potentiometric surface of the Floridan aquifer for September 1981. Data for 211 wells were collected during the period September 21-25. The map represents conditions near the end of the summer dry season when the aquifer has received its seasonal recharge and pumping is at a maximum; hence, the potentiometric surface is near its highest level for the year.

SUMMARY OF CONDITIONS

Seasonal and annual fluctuations of the potentiometric surface in selected wells in the study area are shown by hydrographs in figure 1. The hydrographs generally indicate that water levels in northern areas remain fairly uniform from year to year and during each year, whereas, water levels in southern areas show larger seasonal cover and annual ranges in fluctuation.

Water levels in the Floridan aquifer in September 1981 were equal to or higher than those measured in May 1981. September levels averaged about 2½ feet higher than May levels in the south and about 5 feet higher in the north. Generally, an average rise of 13 feet in the south and 2 feet in the north is reported from May to September. In agricultural sections of southern Hillsborough, Polk, Manatee, Sarasota, Pasco, northwestern De Soto, and Hardee Counties, water levels rose 15 to 40 feet in individual wells from May 1981 to September 1981. Water levels in this area are greatly affected by irrigation pumpage and normally show large seasonal fluctuations.

Generally water levels in September 1981, when compared to September 1980 levels, averaged 2 feet higher in the central part of the area between Hernando and Hardee Counties, 3 feet lower in the north, and 1 foot lower in extreme southern Hillsborough County. The annual change of water level in individual wells ranges from a decrease of 11 feet in Citrus County to an increase of 9 feet in southern Hillsborough County. Water levels averaged about 1 foot lower than normal September levels.

REFERENCES

Tibbals, B. F., Woodham, W. M., and Schiner, G. R., 1980, Potentiometric surface of the Floridan aquifer, Southwest Florida Water Management District, September 1980: U.S. Geological Survey Open-File Report 81-1096.

_____ 1981, Potentiometric surface of the Floridan aquifer, Southwest Florida Water Management District, May 1981: U.S. Geological Survey Open-File Report 81-1096.

ALTITUDE OF WATER LEVEL IN FEET ABOVE OR BELOW NATIONAL GEODETIC VERTICAL DATUM OF 1929

November 1974 to May 1975, and for May and November 1976 to May 1979, and for May and November 1980 to May 1981.

The potentiometric surface is the level to which water will rise in tightly cased wells tapping the Floridan aquifer. The surface is mapped by determining the altitude of water levels in a network of wells and is represented on maps by contours connecting points of equal altitude.

This report shows the potentiometric surface of the Floridan aquifer for September 1981. Data for the potentiometric surface were collected during September 21-25. The map represents conditions near the end of the summer rainy season, when the aquifer has received its seasonal recharge and pumping is a minimum, hence, the potentiometric surface is near its highest level for the year.

SUMMARY OF CONDITIONS

Seasonal and annual fluctuations of the potentiometric surface in selected wells in the study area are shown by hydrographs in figure 1. The hydrographs generally indicate that water levels in northern areas remain fairly uniform from year to year and from each year, whereas, water levels in southern areas show larger seasonal and annual ranges in fluctuation.

Water levels in most of the wells measured in September 1981 were equal to or higher than those measured in May 1981. September levels averaged about 2½ feet higher than May levels in the south and about 5 feet higher in the north. Normally, an average rise of 13 feet in the south and 7 feet in the north is expected from May to September. In agricultural sections of southern Hillsborough, Manatee, Sarasota, DeSoto, Hardee, Charlotte, De Soto, and Hardee Counties, water levels rose 10 to 16 feet in individual wells from May 1981 to September 1981. Water levels in this area are affected by irrigation pumpage and normally show large seasonal fluctuations.

Generally water levels in September 1981, when compared to September 1980 levels, were about 2 feet higher in the central part of the area between Hernando and Hardee Counties, 3 feet lower in the north, and 1 foot lower in extreme southern areas. The greatest change in water level in individual wells reported during a decrease of 11 feet in Citrus County to an increase of 9 feet in southern Hillsborough County. Water levels averaged about 1 foot lower than normal September levels.

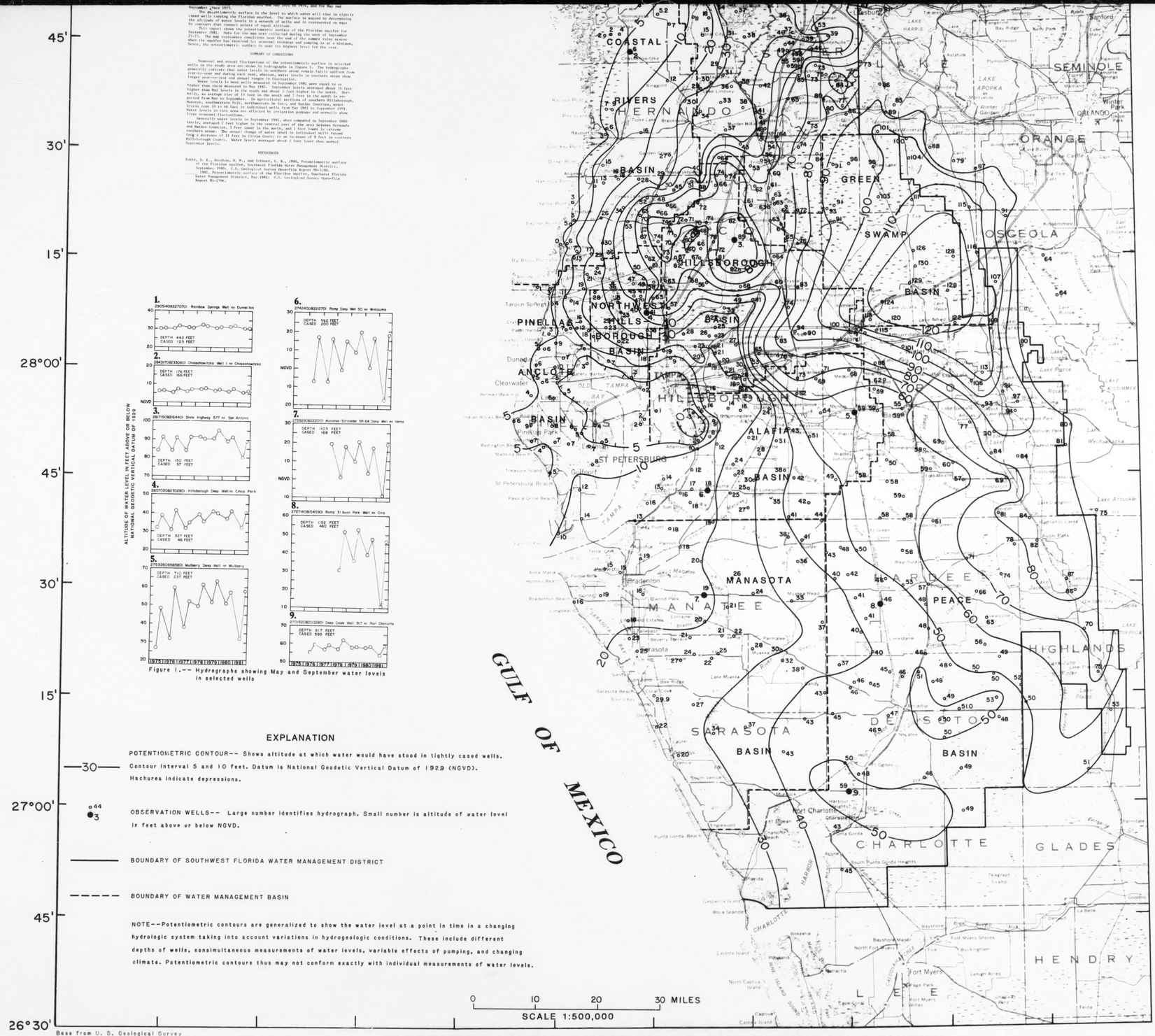
REFERENCES

Tibbl, D. K., Woodham, W. M., and Schiner, G. R., 1980, Potentiometric surface of the Floridan aquifer, Southwest Florida Water Management District, September 1980: U.S. Geological Survey Open-File Report 80-1280.

1981, Potentiometric surface of the Floridan aquifer, Southwest Florida Water Management District, May 1981: U.S. Geological Survey Open-File Report 81-796.

ALTITUDE OF WATER LEVEL IN FEET ABOVE OR BELOW NATIONAL GEODETIC VERTICAL DATUM OF 1929
1. 290540822270701 Rainbow Springs Well nr Dunnellon
DEPTH 442 FEET
CASED 125 FEET
2. 284307082330601 Chassahowitzka Well 1 nr Chassahowitzka
DEPTH 176 FEET
CASED 168 FEET
NGVD
3. 280750826440I Shirk Highway 577 nr. San Antonio
DEPTH 150 FEET
CASED 57 FEET
4. 280700826302801 Hillsborough Deep Well nr. Citrus Park
DEPTH 327 FEET
CASED 46 FEET
5. 275326095585801 Mulberry Deep Well nr Mulberry
DEPTH 710 FEET
CASED 237 FEET
6. 274240082220701 Romp Deep Well 50 nr Winsome
DEPTH 562 FEET
CASED 200 FEET
7. 272620082220101 Monster-Schneider SR 64 Deep Well nr Vena
DEPTH 1105 FEET
CASED 168 FEET
8. 272714081545901 Romp 31 Avon Park Well nr. Ona
DEPTH 1152 FEET
CASED 460 FEET
9. 270152083000280I Deep Creek Well 917 nr Port Charlotte
DEPTH 917 FEET
CASED 595 FEET
1975 1976 1977 1978 1979 1980 1981

Figure 1.-- Hydrographs showing May and September water levels in selected wells


COASTAL RIVERS BASIN
HERNANDO
SUMTER
LAKE
SEMINOLE
ORANGE
GREEN SWAMP
OSCEOLA
HILLSBOROUGH
NORTHEST HILLS BOROUGH BASIN
PINELLAS ANCLOTE BASIN
TAMPA
ST PETERSBURG
ALAFIA BASIN
MANATEE
MANASOTA
PEACE
HARDEE
HIGHLANDS
SARASOTA BASIN
DE SOTO BASIN
CHARLOTTE
GLADES
HENDRY
LEE
GULF OF MEXICO
EXPLANATION
POTENTIOMETRIC CONTOUR-- Shows altitude at which water would have stood in tightly cased wells. Contour interval 5 and 10 feet. Datum is National Geodetic Vertical Datum of 1929 (NGVD). Hachures indicate depressions.
OBSERVATION WELLS-- Large number identifies hydrograph. Small number is altitude of water level in feet above or below NGVD.
BOUNDARY OF SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
BOUNDARY OF WATER MANAGEMENT BASIN
NOTE--Potentiometric contours are generalized to show the water level at a point in time in a changing hydrologic system taking into account variations in hydrogeologic conditions. These include different depths of wells, nonsimultaneous measurements of water levels, variable effects of pumping, and changing climate. Potentiometric contours thus may not conform exactly with individual measurements of water levels.
0 10 20 30 MILES
SCALE 1:500,000
45' 30' 15' 28°00' 45' 30' 15' 27°00' 45' 26°30'

Base from U. S. Geological Survey
State of Florida map 1967 1:500 000

POTENTIOMETRIC SURFACE OF THE FLORIDAN AQUIFER SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT SEPTEMBER 1981

BY

D.K. Yobbi and G.R. Schiner

1981